



LIFE Smart Fertirrigation - Integrated pig manure digestate processing for direct injection of organic liquid fertiliser into irrigation systems

LIFE14 ENV/ES/000640



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Project description:

Background

Spain is Europe's second largest producer of pork with 99 561 pig farms and more than 26 million pigs that generate 70 million kg of manure per day (2.7kg/animal per day). Pig manure can have significant benefits for agriculture, if treated correctly and in an environmentally respectful way. It is a valuable fertiliser rich in organic nutrients that become available to crops immediately after application.

The excess of manure available in intensive pig breeding areas, however, along with a lack of land to spread it on, needs addressing. Many anaerobic digestion plants have nevertheless been established to convert the enormous amount of pig slurries into biogas and digestate. Biogas can be transformed into renewable energy, while the digestate has untapped potential.

Objectives

LIFE Smart Fertirrigation aims to demonstrate the environmental and economic feasibility of innovative pig manure digestate treatment at biogas plants in order to produce liquid and solid biofertiliser. It proposes to optimise the treatment of both manure liquid and solid fraction so that after internal recycling of nutrients, the liquid fraction can be directly injected into irrigation systems as organic fertiliser. By replacing mineral fertilisation in a cost-efficient way, opportunities for biogas producers and farmers will be created. Reducing the use of mineral fertilisers will also cut greenhouse gas emission and prevent soil acidification and eutrophication.

The digestate treatment process is made up of three main phases: - Mechanical separation of the digestate's solid and liquid fractions; -Extra filtration of liquid fraction to remove suspended solids and prevent clogging, making it suitable for direct injection into the irrigation system; and - Drying out of the solid fraction with the excess heat from the biogas production process and later ammonia treatment in an innovative pilot biological treatment plant.

In addition, the project aims to reduce phosphorous levels in pig manure at source by adding phytase enzymes to the pig feed. Due to pigs' inability to digest phosphate present in pig feed, about 90% of phosphorous content is released in their manure. Innovative phytase enzymes can significantly reduce excreted phosphate in manure thus preventing over enrichment.

Expected results:

- Prevention of 3 600 tonnes of CO₂ emissions during the project implementation;
- 20% increase in the nutrient absorption capacity of the plant in comparison with inorganic fertilisers, leading to the reduction of nitrogen and phosphorous in the ecosystem;
- 30% reduction of phosphorus in tested pig manure in comparison with manure from conventionally

- bred pigs (along with a reduction of 3 400 kg of phosphorus in tested pig manure);
- Reduction in the costs of the treatment of the wastewater due the reduction of the organic load in the pig manure;
- Production of 50% cheaper liquid fertilisers than inorganic fertiliser; and
- 70% substitution of inorganic fertilisers in the project area.

Results

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Environmental issues addressed:

Themes

Industry-Production - Agriculture - Forestry

Keywords

eutrophication, Agriculture, water quality

Target EU Legislation

- Water
- Directive 91/676 - Protection of waters against pollution caused by nitrates from agricultural so ...
- Directive 2006/118 - Protection of groundwater against pollution and deterioration (12.12.2006)

Natura 2000 sites

Not applicable

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Beneficiaries:

Coordinator	COPISO SORIA
Type of organisation	Professional organisation
Description	COPISO SORIA is a leading agricultural cooperative established by stockbreeders initially with the aim of collectively buying animal feed. COPISO has more than 1 200 members.
Partners	Dorset DE(Dorset Agrar- und Umwelttechnik GmbH), Germany BWMINT(Bosman Watermanagement International B.V.), Netherlands CodeReg(COMUNIDAD DE REGANTES DE CANAL DE ALMAZÁN), Spain TRANSFER(Transfer Latin Business Consultancy S.L.), Spain PURAL(PURINES ALMAZÁN S.L), Spain TeqBio(TECNOLOGÍA ULTRAVIOLETA S.L), Spain

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Administrative data:

Project reference LIFE14 ENV/ES/000640
Duration 01-SEP-2015 to 31-DEC -2018
Total budget 2,628,126.00 €
EU contribution 1,491,973.00 €
Project location Brandenburg(Deutschland),Castilla-León(España),Cataluña(España),Zuid-Holland(Nederland)

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Read more:

Leaflet	Title: "LIFE Smart Fertirrigation: Prcesamiento integrado del digestato de purines de cerdo para la inyección directa en los sistemas de riego como fertilizante líquido" (154 KB) Editor: LIFE Smart Fertirrigation No of pages: 1
Project web site	Project's website
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